U.S. ATLAS M&O Estimate
WBS Dictionary

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3.6

WBS Number	Description
3.6	**Trigger/DAQ**

The US ATLAS M&O estimate for the Trigger DAQ (TDAQ) includes costs for Pre-operations, Operations, Maintenance, and CERN common costs. The Maintenance Costs are included in the CERN common costs.

WBS Number	Description
3.6.1	**Pre Operations** Pre operations testbeam TDAQ shall include: 1. Updating the user documentation to include latest software and hardware descriptions and practices 2. Electronic and software integration of testbeam systems prior to testbeam data taking. 3. On-call support and maintenance of running testbeam systems. 4. Archival storage of software and configuration information. 5. Support of reference and distribution systems for TDAQ software.
3.6.1.1	
3.6.1.2	**Communications and Travel** Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the testbeam TDAQ role during pre operations.
3.6.1.2.1	**Communications and Travel** Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the testbeam TDAQ role during pre operations. Comments: This includes 1 trip to CERN per year in '03 and 2 in '04 and '06 for an EE or CS at 2.5k$ per trip plus 1.5k$ per year in support of video conferencing and phone communications
3.6.1.2.2	**Communications and travel** Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the testbeam TDAQ role during pre operations. Comments: This includes 1 trip to CERN per year in '03 and 2 in '04 and '06 for an EE or CS at 2.5k$ per trip plus 1.5k$ per year in support of video conferencing and phone communications
3.6.1.3	**Programming Support** The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date.

WBS Number	Description
3.6.1.3.1	**Programming Support**
	The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date.
	Comments: In support of testbeam operations ANL will provide approximately .1 CS and .1 EE in FY 04 and FY 06 plus 2 trips
3.6.1.3.2	**Programming Support**
	The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date.
	Comments: In support of testbeam operations MSU will provide approximately .1 CS and .1 EE in FY 04 and 06 plus one trip.
3.6.1.4	**Equipment**
	Testbeam and calibration activities will require some specialized TDAQ electronics. This equipment needs to be fabricated or purchased. The equipment in this category is equipment that is not subdetector specific and thus will be used in multiple testbeam setups.
	Comments: Equipment required to support testbeam operations. This estimate is based on the level of spending required for this activity during FY01/FY02.
3.6.1.4.1	**Equipment ANL**
	Testbeam and calibration activities will require some specialized TDAQ electronics. This equipment needs to be fabricated or purchased. The equipment in this category is equipment that is not subdetector specific and thus will be used in multiple testbeam setups.
	Comments: Equipment required to support testbeam operations. This estimate is based on the level of spending required for this activity during FY01/FY02.
3.6.1.4.2	**Equipment MSU**

WBS Number **3.6.1**

Description

Testbeam and calibration activities will require some specialized TDAQ electronics. This equipment needs to be fabricated or purchased. The equipment in this category is equipment that is not subdetector specific and thus will be used in multiple testbeam setups.

Comments: Equipment required to support testbeam operations. This estimate is based on the level of spending required for this activity during FY01/FY02.

WBS Number	Description
3.6.2	**Operations**
	Operations shall include: 1. Updating the user documentation to include latest software and hardware descriptions and practices 2. Electronic and software integration of detector systems prior to data taking. 3. On-call support and maintenance of running detector TDAQ systems. 4. Archival storage of software and configuration information. 5. Support of reference and distribution systems for TDAQ software.
3.6.2.1	**Supervisor RoI Builder**
	The Supervisor RoI Builder is the sole responsibility of US groups. Full support for the hardware, software and documentation will be required for this system from the time that this system is deployed
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	The Supervisor RoI Builder is the sole responsibility of US groups. Full support for the hardware, software and documentation will be required for this system from the time that this system is deployed
	Comments: This includes 12% of a CS in '04-'05 to support the initial SRB system and 50% of a CS starting in '06 with slightly more labor during initial beam startup (06-08). It also includes material costs of $600 in '04, 4k$ in '05 and beyond.
3.6.2.1.2	**Supervisor RoI Builder**
	The Supervisor RoI Builder is the sole responsibility of US groups. Full support for the hardware, software and documentation will be required for this system from the time that this system is deployed
	Comments: This includes 12% of a EE in '04-'05 to support the initial SRB system and 50% of a EE starting in '06. It also includes material costs of $2000 in '05 to 12.
3.6.2.2	**Communications and Travel**
	Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the detector TDAQ system during operations
3.6.2.2.1	**Communications and Travel**

Description

Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the detector TDAQ system during operations

Comments: Travel (this represents 4 trips to CERN at 2.5k$ per trip) for the CS involved in support(in '07 a 30k residency cost is assumed).

3.6.2.2.2 Communications and Travel

Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the detector TDAQ system during operations

Comments: Travel (this represents 4 trips to CERN at 2.5k$ per trip) for the EE involved(in '07 a 30k residency cost is assumed).

3.6.2.2.3 Communications and travel

Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the detector TDAQ system during operations

Comments: Travel (this represents 4 trips to CERN at 2.5k$ per trip) for the CS involved(in '07 a 30k residency cost is assumed).

3.6.2.2.4 Communications and travel

Consultation and effective interaction with the system designers will require both travel and phone or video conferencing. This area includes videoconferencing and travel in support of the detector TDAQ system during operations

Comments: Travel (this represents 4 trips to CERN at 2.5k$ per trip) for the CS involved (in '07 a 30k residency cost is assumed)

3.6.2.3 Programming Support

The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date.

WBS Number	Description
3.6.2.3.1	**Programming Support** The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date. Comments: The support for the LVL2 software will involve 50% of a CS per year. A slightly higher level is required before and during initial running. Base & infrastructure 1 Post Doc for programming support in 2006 to 2012.
3.6.2.3.2	**Programming Support** The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date. Comments: The support for the LVL2 software will involve 50% of a CS per year. A slightly higher level is required before and during initial running.
3.6.2.3.3	**Programming Support** The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date. Comments: The support for the LVL2 software will involve 50% of a CS per year. A slightly higher level is required before and during initial running.
3.6.2.3.4	**programming Support** The TDAQ software is primarily written by the members of the TDAQ team. As hardware, network technology and operating systems and capabilities evolve so too will the software. This requires a dedicated effort from within ATLAS to support software and to keep the documentation up to date. Comments: The support for the LVL2 software will involve 50% of a CS per year. A slightly higher level is required before and during initial running.
3.6.2.4	**Test facilities**

WBS Number	Description
	TDAQ hardware used in the ATLAS experiment will be need to be checked and evaluated in a test lab periodically. Such a facility will require computers, network equipment, etc. This equipment needs to be supported and replaced on an as needed basis. This item includes support for such a test lab and necessary equipment
3.6.2.4.1	**Test Facilities**
	TDAQ hardware used in the ATLAS experiment will need to be checked and evaluated in a test lab periodically. Such a facility will require computers, network equipment, etc. This equipment needs to be supported and replaced on an as needed basis. This item includes support for such a test lab and necessary equipment
	Comments: The ATLAS wide cost for support of test facilities is expected to be 60k$ in 2005 and beyond. ANL will need to support some additional equipment in support of the SRB system which is the sole responsibiility of the US groups.
3.6.2.4.2	**Test Facilities**
	TDAQ hardware used in the ATLAS experiment will need to be checked and evaluated in a test lab periodically. Such a facility will require computers, network equipment, etc. This equipment needs to be supported and replaced on an as needed basis. This item includes support for such a test lab and necessary equipment
	Comments: The ATLAS wide cost for support of test facilities is expected to be 60k$ in 2005 and beyond. MSU will provide some hardware in support of the SRB which is the sole responsibility of US groups.

WBS Number	Description
3.6.3	**CERN Common Costs**

CERN Common costs for TDAQ

Comments: The costs for Maintenance/Repairs, Operations, and Consumables at a US Share of 15.9% are included in the common costs in WBS3.7